

Crankshaft Main Bearings

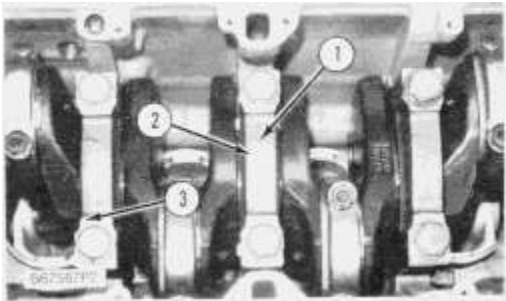
SMCS - 1203-010

Remove & Install Crankshaft Main Bearings

| Tools Needed | | A | B | C |
|--------------|---------------------------|---|---|---|
| 2P5518 | Bearing Tool | 1 | | |
| | Plastigage | | * | |
| 8S2328 | Dial Test Indicator Group | | | 1 |

Start By:

- a. remove oil pump



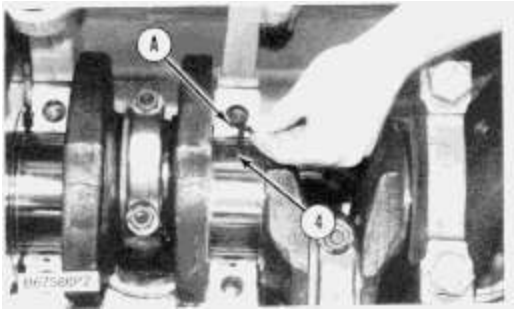
Typical Example

1. Check each main bearing cap (2) for its location on the engine. Each cap has an arrow (1), which shows the direction of the front of the block, and a number (3) which gives the location of that cap.
2. Remove No. 2 through No. 6 main bearing caps from the engine. Remove the lower bearings from the caps.
3. Remove the thrust plate from each side of the No. 4 upper main bearing.

NOTICE

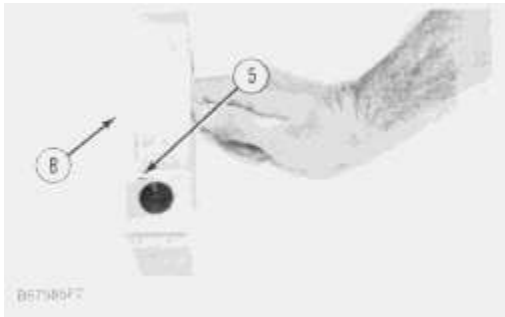
If the crankshaft is turned in the wrong direction, the tab of the bearing will be pushed between the crankshaft and the cylinder block. This

will cause damage to the crankshaft and block.



Typical Example

4. Turn the crankshaft until tool (A) can be installed in oil hole (4). Turn the crankshaft in the direction which will push the upper main bearing out, tab end first.



NOTE: Install the bearings dry when the clearance checks are made. Put clean engine oil on the bearings for final assembly.

5. Install lower bearings in the bearing caps.

6. Install upper bearings in the cylinder block with tool (A).

NOTE: Be sure tab (5) on the back of the bearings fits in the groove of the caps and cylinder block.

NOTE: When the bearing clearance is checked and the engine is in a vertical position, such as in the vehicle, the crankshaft will have to be lifted up and held against the upper halves of the main bearings to get a correct measurement with Plastigage (B). The Plastigage will not hold the weight of the crankshaft and give a correct indication. If the engine is in a horizontal position, such as on an engine stand, it is not necessary to hold the crankshaft up. Do not turn crankshaft when the Plastigage is in position to check clearance.

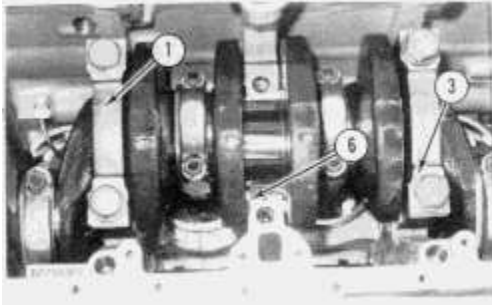
NOTICE

Do not use an impact wrench to tighten the bolts the additional 120°.

7. Check the bearing clearance with tool (B) as follows:

a. Put **2P2506 Thread Lubricant** on the threads of the cap bolts. Install the bearing caps and bolts finger tight.

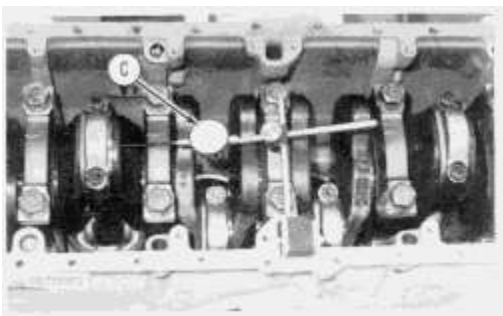
- b. Tighten the bolts on the tab end of the caps first to a torque of $260 \pm 14 \text{ N}\cdot\text{m}$ ($190 \pm 10 \text{ lb ft}$).
- c. Tighten the bolts on the other end of the caps to a torque of $260 \pm 14 \text{ N}\cdot\text{m}$ ($190 \pm 10 \text{ lb ft}$).
- d. Put a mark across the bolt head and cap. Tighten the bolts opposite the tab end 120° . Tighten the bolts on the tab end of the cap 120° .



Typical Example

NOTE: Make sure the main bearing caps are installed with their identification number (3) in alignment with the identification number on the left side of the cylinder block, and arrow (1) toward the front of the block.

- 8. Remove the bearing caps and tool (B).
- 9. Measure the thickness of the Plastigage to find the bearing clearance. The clearance for new bearings must be $0.091 - 0.186 \text{ mm}$ ($.0036 - .0073 \text{ in}$). **The maximum clearance for used bearings is 0.025 mm (0.010 in).**
- 10. Install a thrust plate (6) on each side of the No. 4 upper bearing. Install the thrust plates with the side marked "**Block Side**" toward the cylinder block.
- 11. Install No. 2 through 6 main bearing caps. Follow the tightening procedure in Step 7.



Typical Example

12. Do Steps 2, 4 through 9 and 11 for the No. 1 and No. 7 main bearing caps. Check the end play of the crankshaft with tool (C). Make sure the dial indicator is against a machined surface. End play for new thrust plates must be $0.152 - 0.508 \text{ mm}$ ($0.006 - 0.020 \text{ in}$). **The maximum end play with used thrust plates is 0.89 mm (0.035 in).**

End By:

- a. install oil pump

Crankshaft

SMCS - 1202-012; 1202-011

Remove Crankshaft

| Tools Needed | | A | B |
|--------------|----------------------------|---|---|
| 1H3110 | Bearing Pulling Attachment | 1 | |
| 8B7560 | Step Plate | 1 | |
| 6V9061 | Hand Pump (or electric) | 1 | |
| 1H3108 | Leg | 2 | |
| 1H3107 | Puller Assembly | 1 | |
| 3H468 | Plates | 5 | |
| 3H465 | Nuts | 2 | |
| 1P820 | Hydraulic Puller Group | 1 | |
| 5B637 | Nut | 1 | |
| 8S6586 | Screw | 1 | |
| 5P944 | Dowel Puller Group | | 1 |
| 5P939 | Extractor | | 1 |

Start By:

- a. remove timing gear cover
- b. remove flywheel housing
- c. remove pistons and connecting rod assemblies
- d. remove crankshaft rear seal and wear sleeve
- e. remove crankshaft front seal and wear sleeve

NOTE: Check the bearing caps for a number as to their location. If a number can not be seen, put a number on the left side of the cylinder block and the bearing cap.